

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) Publication number:

0 606 899 A3

(12)

EUROPEAN PATENT APPLICATION(21) Application number: **94100369.1**(51) Int. Cl.⁶: **C12P 7/42, C12P 7/62,
//C12P7:42,C12R1:01**(22) Date of filing: **12.01.94**(30) Priority: **12.01.93 JP 3422/93**(43) Date of publication of application:
20.07.94 Bulletin 94/29(84) Designated Contracting States:
DE FR GB NL(88) Date of deferred publication of the search report:
05.07.95 Bulletin 95/27(71) Applicant: **DAICEL CHEMICAL INDUSTRIES,
LTD.
1, Teppo-cho
Sakai-shi,
Osaka (JP)**(72) Inventor: **Matsuyama, Akinobu**

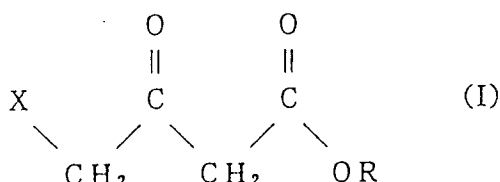
**125, Ohaza-Nakagawa
Arai-shi,
Niigata 944 (JP)**
Inventor: **Tomita, Akira
3-3-501, Honmachi 3-chome**

**Joetsu-shi,
Niigata 943 (JP)**
Inventor: **Kobayashi, Yoshinori
13-11, Kokufu 3-chome
Joetsu-shi,
Niigata 942 (JP)**

(74) Representative: **Hansen, Bernd, Dr.
Dipl.-Chem. et al
Hoffmann, Eitle & Partner,
Patentanwälte,
Arabellastrasse 4
D-81925 München (DE)**(54) **Processes for production of optically active 4-halo-3-hydroxybutyric acid esters.**

(57) A microorganism that is capable of acting a 4-halo-acetoacetic acid ester shown by the general formula:

be produced with commercial efficiency.



wherein X represents a halogen atom and R represents an optionally substituted alkyl group, alkenyl group, cycloalkyl group or aryl group, to produce an optically active 4-halo-3-hydroxybutyric acid ester or a preparation thereof is permitted to act on said 4-halo-acetoacetic acid ester and the product optically active 4-halo-3-hydroxybutyric acid ester is harvested. Thus, the desired optically active 4-halo-3-hydroxybutyric acid ester of high optical purity can

EP 0 606 899 A3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 94 10 0369

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
X	EP-A-0 208 662 (SIGMA-TAU) 14 January 1987 * the whole document * ---	1,2,6, 10-14	C12P7/42 C12P7/62 /(C12P7/42, C12R1:01)
X	GB-A-2 132 614 (SIGMA-TAU) 11 July 1984 * the whole document * ---	1,2,6, 10-14	
X	US-A-4 933 282 (HASAGAWA) 12 June 1990 * the whole document * ---	1,2,6, 10-14	
X	CHEMICAL ABSTRACTS, vol. 117, no. 19, 9 November 1992 Columbus, Ohio, US; abstract no. 190226, PATEL, RAMESH N. ET AL 'Stereoselective reduction of .beta.-keto esters by Geotrichum candidum' * abstract * & ENZYME MICROB. TECHNOL. (1992), 14(9), 731-8 CODEN: EMTED2; ISSN: 0141-0229, 1992 ---	1,2,6, 10-14	
D,X	DATABASE WPI Section Ch, Week 8633 Derwent Publications Ltd., London, GB; Class B05, AN 86-215129 & JP-A-61 146 191 (KANEGAFUCHI CHEM KK) , 3 July 1986 * abstract * --- -/--	1,2,6, 10-14	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 28 April 1995	Examiner Delanghe, L
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ***** & : member of the same patent family, corresponding document			



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 94 10 0369

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
Y	DATABASE WPI Section Ch, Week 8605 Derwent Publications Ltd., London, GB; Class B05, AN 86-031819 & JP-A-60 251 890 (NIPPON SYNTH CHEM IND) , 12 December 1985 * abstract *	1	
Y	DATABASE WPI Section Ch, Week 8827 Derwent Publications Ltd., London, GB; Class B05, AN 88-186414 & JP-A-63 123 387 (DENKI KAGAKU KOGYO KK) , 27 May 1988 * abstract *	1	
A	CHEMICAL ABSTRACTS, vol. 113, no. 25, 17 December 1990 Columbus, Ohio, US; abstract no. 229624, SHIMIZU, S. ET AL 'Microbial asymmetric reduction of ethyl 4-chloro-3-oxobutanoate to optically active ethyl 4-chloro-3-hydroxybutanoate' * abstract * & BIOTECHNOL. LETT. (1990), 12(8), 593-6 CODEN: BILED3;ISSN: 0141-5492, 1990	1	
E	DATABASE WPI Section Ch, Week 9412 Derwent Publications Ltd., London, GB; Class B05, AN 94-094839 & JP-A-06 038 776 (AJINOMOTO KK) , 15 February 1994 * abstract *	1,2,6, 10-14	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
Place of search THE HAGUE		Date of completion of the search 28 April 1995	Examiner Delanghe, L
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			